4/27/66

John P:

2 copies each of two versions of the chart we talked about — one set with and one set without notes.

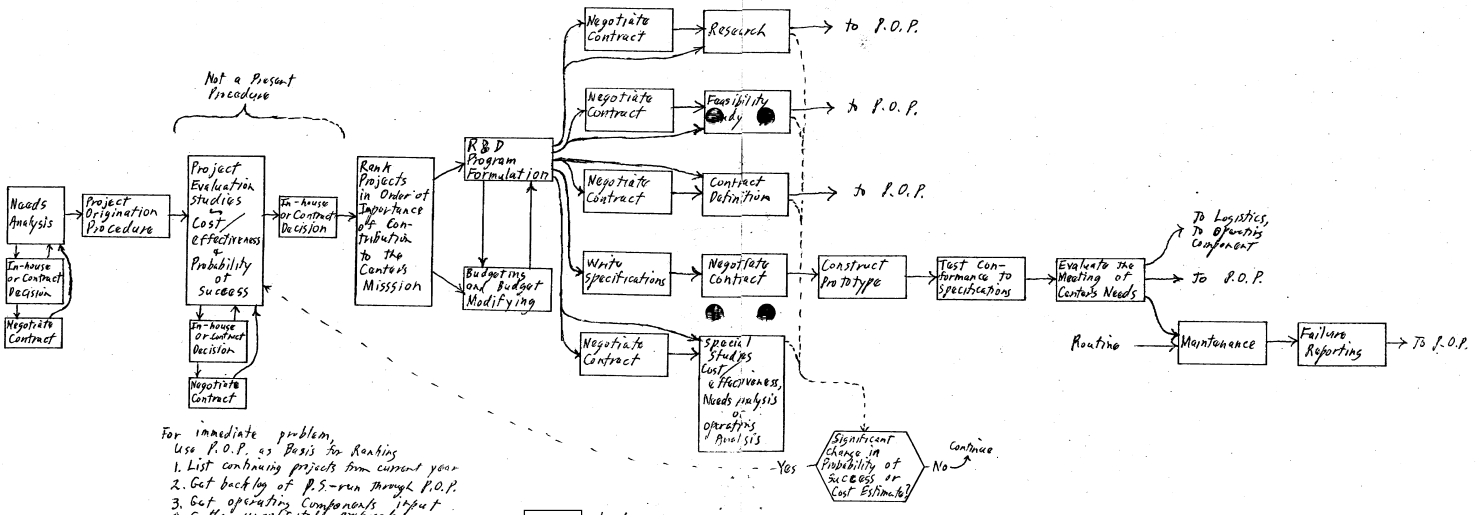
I spent a couple of hours with [redacted] STAT talking about Proj. Origination Procedure. He is concerned that the Proj. Orig. Proc. takes project suggestions one at a time and makes an individual evaluation. He sees the lack of relating these evaluations to each other which would result in a ranked list such as we discussed. He does not think the Proj. Eval. Comm. should do this but he sees no one ready to do it.

I told him that you and I had discussed this very same point this morning and had reached some conclusions — but asked for time to put the chart together before saying what conclusions.

Perhaps you'll want to talk with Bill before the next Evaluation Committee meeting on Friday.

I won't discuss this with Bill unless you wish me to.

DCI




STAT

4/27/66 D.M.

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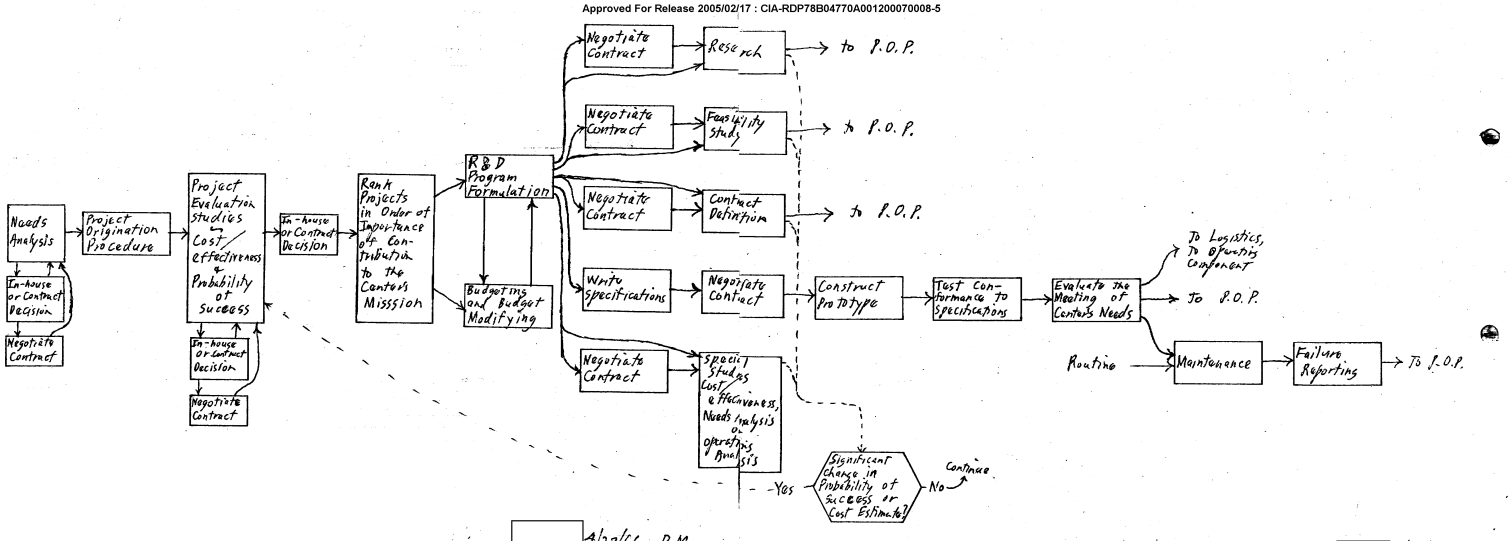



STAT

4/27/66 D.M.

9/27/66 D.M.

STAT

Re: Memos on R&D Management Control Methods:

Suggested outline for content of the sequence

#1

STAT I. Outputs from [redacted] study are being received

A. Project Origination Procedure is one procedure which could be started immediately because it interfaced with present procedures without conflict

B. Other suggestions must be implemented more slowly. We foresee an evolution not a revolution. We'll continue doing our work in the same way until new methods are announced by one of these memos and the effective date is given.

II We have asked for this study because the relatively informal methods we have used up to now are not capable of coping with the expanded R&D program we see.

A. Maybe the suggestions coming out of the study should be viewed like a doctor's prescription. We should not reject the treatment because the medicine has a bad taste going down.

B. The suggestions may be wrong but the only true test is to try them. By asking for the study, we have indicated our willingness to try some new ideas.

#2.

I. ~~The~~ Planning, Programming, and Budgeting required of us by Bureau of the Budget Bulletin # 66-3.

A. On August 25, 1965 President Johnson announced at his news conference that program budgeting was to be introduced into the entire federal establishment. "Under this new system each Cabinet and agency head will set up a very special staff of experts who, using the most modern methods of program analysis, will define the goals of their department for the coming year...This program is designed to achieve three major objectives: it will help us to find new ways to do jobs faster, to do jobs better, & to do jobs less expensively. It will insure a much sounder judgement through more accurate information, pinpointing those things that we ought to do more, spotlighting those things that we ought to do less".

B. This P.P.& B. procedure is new to PSDS and to the Center. It requires that we do some things formally with good documentation that we have done rather informally before

II The Management Control Methods study will surely suggest some ~~of the~~ activities also required by Bulletin #66-3.

A The Bulletin is even more specific than the President in his speech. It states "--setting goals, defining objectives and developing planned programs -- are important integral parts of preparing and justifying a budget submission." and "An analytical effort, wherever applicable, will utilize systems analysis, operations research, and other pertinent techniques."

B. The Management Control Methods study will suggest in detail how these activities can be formalized. We really do them now but not in sufficient depth and we do not [illegible] in useable form.

#3.

I. We have been using the formal Project Origination Procedure for several weeks now.

A. It has had to function more rapidly and handle more Project suggestions in a short time than will be usually the case. We hope that the Evaluation Committee will work at a slower rate all year long.

B. The rush of work now is necessary to put together a program for FY 67.

II The Project Origination Procedure is really the first step in program formulation

A. The Project Origination Procedure gives a first estimate of:

1. What does the Project Suggestion intend to improve?

2. How important to the Center's operation is the improvement that is hoped for?

3. How much money do we estimate the Research and Development will cost?

4. How much time do we estimate the work will require?

and some other similar questions.

B. The estimates are based on a very quick investigation of immediately available data, experience and knowledge of P&DS personnel, and outside experts opinions.

C. The Evaluation Committee recommends a Proceed or Stop Action to the Asst. for Plans and Development. A Proceed decision by him will result in a project being originated. The project is added to a list of projects which are worth Research and Development effort if funds are available.

#4.

I. Project Suggestions come to us from many sources

A From Operating Components

B From outside companies making unsolicited proposals

C. From ourselves in P&OS

D. From Plans Branch of P&OS based on anticipated changes in acquisition systems.

II But These sources aren't sufficient. Planning, Programming, and Budgeting requires us to look five years into the future.

A. Asking operating components to anticipate their needs is a little like asking an automobile production line worker to design a new automobile. He may have some good ideas but he hasn't time to take the long look necessary.

B. Outside companies cannot anticipate Center problems

C We in P&OS are all occupied with our own individual parts of the present program and we all are too busy to take the long analytical look necessary

D. We need the assistance of some of the techniques of operations analysis and system analysis

III We will call the long analytical examination of the Centers operations by the name of Needs Analysis.

A. We haven't really started it yet. We need some people with different skills and training than we now have in P&OS.

B. When we do start, it will be done by the Plans Branch. They are now doing Needs Analysis in anticipating equipment changes which new acquisition systems will require.

C. It is logical for them also to perform the analysis of the exploitation processes which go on here in the Center.

IV We expect Needs Analysis to initiate Project Suggestions feeding into the Project Origination Procedure which will keep the Center supplied with the advanced equipment [illegible] and economic exploitation of photography.

#5. 

I. We have suggested how Needs Analysis and other sources feeds Project Suggestions to the Project Origination Procedure and how the Project Origination Procedure provides a list of projects.

II Notice that the Project Origination Procedure evaluates each Project Suggestion on its own merits not related to other Projects or Project Suggestions.

III We have been using the results of the Project Origination Procedure to rank Projects in a list in order of importance of their contributions to the Center.

IV Actually, an evaluation in greater depth is necessary. We must examine all possible alternative methods of achieving the improvements hoped for by an individual project.

A We should perform essentially a cost/effectiveness study, for each project, whether planned or under way.

B. We should estimate the probability of success in achieving the desired improvement by the method the project intends

C. We should compare the project with all possible alternatives.

D. We should use some of the techniques of operations research in the evaluation.

V. We will call this activity Project Evaluation studies.

VI. We will have more to say about who performs these studies.

VII Project Evaluation studies are now performed in an informal way. We must really Evaluate projects when we decide how much money to budget for each project. Some time in the future, we will begin the formal performance of Project Evaluation studies. (Note that P.P.B. requires this)

#6

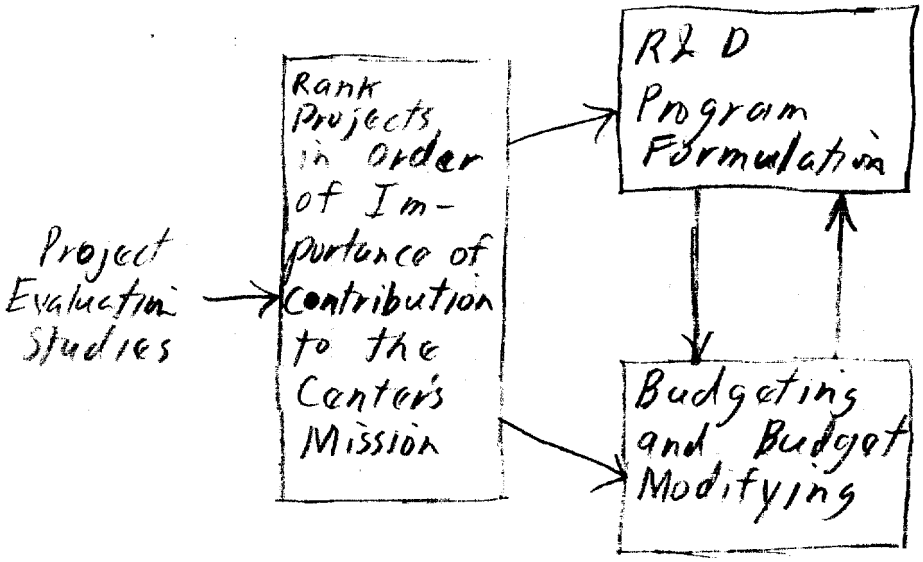
I The Project Evaluation Studies give a ranked list of projects in the order of the importance of their contribution to the Center

II This ranked list, including planned and in-process projects is the basis for Program Formulation

III Program Formulation essentially picks off a group of projects from the ranked list. Theoretically, every project on the list should be done immediately since they are all worthwhile. Practically, a smaller set must be chosen.

IV In actual fact, other constraints will not permit every project to be funded. A good manager tailors his request for funds to what he realistically can expect to get and justifies his request by listing the strongest projects

V A manager usually prepares several programs based on several target funding levels. Budgeting and programming are intimately dependent.



#7

I. Program Formulation – What goes into Program?

A. Have previously made a decision as to whether to perform the study in-house with Center personnel and facilities or to contract for the work

B. Research studies
   1. Feed results back to Project Origination Procedure

C. Feasibility studies
   1. Feed results back to P.O.P.

D. Contract Definition studies
   1. Feed results back to P.O.P.

E. Special Studies
   1. Cost/effectiveness type
   2. Needs Analysis type
   3. Operations Analysis type

F. Construct Prototype
   1. Write specifications
   2. Negotiate contract – obtain and evaluate proposals.
   3. Monitor construction

G. At any point, increased knowledge gained as a result of the work may make it proper to go back and re-evaluate the project based on the new knowledge about probability of success or a new cost estimate.

II. Now we go into test and evaluation which will be performed by the Equipment Performance Branch.

D. M.
4/29/66

Mr. John P.

I'd like to discuss this soon, like tomorrow, if possible.

Dan M.

4/25/66

STAT From: [redacted]

To: Asst for Plans and Development

The most common and most costly error which is made in R&D programs is that of focusing attention too early on construction of equipment. The outstanding authority for this statement is Hitch of the Department of Defense, though others concur.

The Center R&D effort has made this error in the past. The P&DS has acted as if its purpose were to develop equipment. Because of two quickly beginning construction of prototype equipments, the equipments many times failed to be useful to the Center. ~~The Department~~

The Department of Defense has found it mandatory to institute orderly procedures of investigation and evaluation before

entering into prototype procurement. The Center also should institute some formal procedures of investigation and evaluation. The DoD procedures are much too elaborate for the smaller size procurements being made by the Center but some formal procedures are required.

The purpose of the P&DS could ~~be more~~ be stated more correctly as

(1) to identify the needs of the Center,

(2) to find the possible methods to meet these needs,

(3) to evaluate the probable desirability of the alternatives,

(4) to demonstrate to the Center how the equipment or methodology can improve the Center operations.

There are major changes being suggested in the P&DS methods of operation. The changes are being naturally met with opposition by members of your staff particularly at the sub-chief level. The opposition stems from resistance to change which everyone feels ~~and~~ but more significantly from not understanding the change in viewpoint ~~of~~ represented by the statement of P&DS purpose above.

You can help your staff to understand and not to be fearful of the changes they see coming by a series of short written statements from you expounding the ideas behind the coming changes.

The first might be simply a statement of ~~your~~ revised view of the R&D purpose as stated above. The second could show how the new purpose statement translates into P&DS functions. The third could show how the Planning, Programming, and ~~Budgeting~~ Budgeting procedure fits with the new view of purpose. The fourth could show how the purpose translates into sequential tasks for P&DS. The fifth could show the concept of the sequential tasks being translated into procedures, of which the Project Origination Procedure is one.

The statements by you would imply your decision that some changes are necessary. You might or might not agree with the details of such changed procedures as ~~will be~~ are suggested by [redacted] STAT But unless there is a clear strong support from you, any revision of procedures will fail to function properly. Your staff will express its opposition by quietly seeing to it that the revised procedures bog down to where they fail.

If you wish, I should be glad to prepare the outlines of what could be expressed in your statements.

[redacted] STAT

9/25/66

July 1, 1965
NUMBER 3200.9

DDR&E

# Department of Defense Directive

SUBJECT Initiation of Engineering and Operational Systems Development

Refs:
(a) DoD Directive 3200.9, "Project Definition Phase," February 26, 1964 (hereby canceled)
(b) DoD Instruction 3200.6, "Reporting of Research, Development and Engineering Program Information," June 7, 1962
(c) DoD Directive 5500.10, "Rules for the Avoidance of Organizational Conflicts of Interest," June 1, 1963
(d) DoD Instruction 7045.2, "DoD Programming System; Procedures for Program Changes," January 29, 1965
(e) DoD Directive 7045.1, "DoD Programming System," October 30, 1964
(f) DoD Directive 4105.62, "Proposal Evaluation and Source Selection," April 6, 1965
(g) DoD Directive 7250.5, "Reprogramming of Appropriated Funds," March 4, 1963

## I. PURPOSE

This Directive establishes Department of Defense policies governing Concept Formulation and Contract Definition in the initiation of Engineering Development and Operational Systems Development (herein called Engineering Development) of major projects.

## II. CANCELLATION

Reference (a) is hereby superseded and canceled.

## III. APPLICABILITY AND SCOPE

The provisions of this Directive apply during the Engineering Development by Military Departments and Defense Agencies (hereafter referred to as DoD Components) of items meeting the criteria of Subsection VI. B. For items that do not meet these criteria, the provisions of this Directive are optional.

## IV. DEFINITIONS

Concept Formulation describes the activities preceding a decision to carry out Engineering Development. These activities include accomplishment of comprehensive system studies and experimental hardware efforts under Exploratory and Advanced Development, and are prerequisite to a decision to carry out Engineering Development.

Contract Definition (formerly referred to as Project Definition Phase) is that phase during which preliminary design and engineering are verified or accomplished, and firm contract and management planning are performed.

## V. OBJECTIVES

A. The objective of Concept Formulation is to provide the technical, economic and military bases for a conditional decision to initiate Engineering Development.

B. The overall objective of Contract Definition is to determine whether the conditional decision to proceed with Engineering Development should be ratified. The ultimate goal of Contract Definition, where Engineering Development is to be performed by a contractor, is achievable performance specifications, backed by a firm fixed price or fully structured incentive proposal for Engineering Development. Included in this overall objective are subsidiary objectives to:

1. Provide a basis for a firm fixed price or fully structured incentive contract for Engineering Development.

2. Establish firm and realistic performance specifications.

3. Precisely define interfaces and responsibilities.

4. Identify high risk areas.

5. Verify technical approaches.

6. Establish firm and realistic schedules and cost estimates for Engineering Development (including production engineering, facilities, construction and production hardware that will be funded during Engineering Development because of concurrency considerations).

7. Establish schedules and cost estimates for planning purposes for the total project (including production, operation and maintenance).

## VI. POLICY

A. Organizational Conflicts of Interest - Participation in Contract Definition by competing contractors will not bar their participation in continued Engineering Development under the organizational conflict of interest rules contained in reference (c) and in the Armed Services Procurement Regulation (ASPR) when two or more contractors are used in Contract Definition. In cases where Contract Definition is conducted by a sole-source contractor (see Subsection VI.F.1.b), these rules will not apply because the material generated during Contract Definition will not be used in a competitive procurement. However, such rules will exclude a contractor from participation in Contract Definition if he has performed, under Government contract prior to Contract Definition, work which has as a primary objective the generation of a statement of work for Engineering Development and the prior contract specifically stated the exclusion.

B. Application

1. All new (or major modifications of existing) Engineering Developments and Operational Systems Developments as defined in reference (b), estimated to require total cumulative

RDT&E financing in excess of 25 million dollars, or estimated to require a total production investment in excess of 100 million dollars, shall be in accordance with this Directive unless specific waivers are granted by written approval of the Director of Defense Research and Engineering.

2. Other projects may be required to be conducted in accordance with this Directive, in whole or in part, at the discretion of the DoD Component or as directed by the DDR&E.

C. Concept Formulation

The experimental tests, engineering, and analytical studies that provide the technical, economic and military bases for a decision to develop the equipment or system will be accomplished in the Concept Formulation period. Conditional approval to proceed with an Engineering Development will depend on evidence that the Concept Formulation has accomplished the following prerequisites:

1. Primarily engineering rather than experimental effort is required, and the technology needed is sufficiently in hand.
2. The mission and performance envelopes are defined.
3. The best technical approaches have been selected.
4. A thorough trade-off analysis has been made.
5. The cost effectiveness of the proposed item has been determined to be favorable in relationship to the cost effectiveness of competing items on a DoD-wide basis.
6. Cost and schedule estimates are credible and acceptable.

D. Technology Advancement - The key criterion in the degree of technology advancement permitted in Engineering Development is the level of confidence in the probability of successful development. It is not intended that a system will be limited to an assembly of off-the-shelf components. It is intended that the

technology that is required to meet a system specification not exceed in quantitative performance that which can be demonstrated either in developmental form or in laboratory form. Projection into Engineering Development of anticipated developmental achievement will be permitted only when sufficient quantitative results have been obtained, in laboratory or experimental devices, to allow such projection with a high confidence. In general, these projections will assume the probability of Engineering Developments matching but not exceeding laboratory results.

E. Initiation of Development - Conditional approval to proceed with Engineering Development of an item meeting the criteria of Subsection VI. B. 1 will be formalized by a Format B (see reference (d)) signed by the Secretary of Defense. This Format B is in response to a request from the appropriate DoD Component for initiation of Engineering Development. The request shall be either by memorandum to DDR&E or, if required by reference (e), by a Program Change Proposal (PCP). The request shall be accompanied by an up-to-date Technical Development Plan (TDP) submitted in accordance with reference (b) and containing a plan for the conduct of Contract Definition. The TDP will specifically address and highlight the accomplishment of the prerequisites of Subsection VI. C, including references to, and summaries of, pertinent studies (or experimental hardware developments) together with any other information required to substantiate the achievement of these prerequisites. The Format B will include approval of or modification to the proposed plans in the TDP and designation of a source selection authority (see reference (f)). The request from the DoD Component, if in memorandum form, must be preceded by a PCP needed to introduce the item into the Five Year Force Structure and Financial Plan. Related financing requirements will be processed in accordance with reference (g) and other applicable established procedures.

F. Conduct of Contract Definition - Contract Definition shall be conducted in accordance with the following fundamentals:

1. Participating Organizations. In general, the interests of the Government will be best served by using industrial organizations for the conduct of Engineering Development. Normally, in-house laboratories can contribute most effectively to the Exploratory and Advanced Development efforts and as technical directors for, rather than by conducting, Engineering Development. It is recognized that exceptions to this policy may be necessary; where necessary, such exceptions will be authorized on a case-by-case basis.

a. Contract Definition by Competitive Contractors. Contract Definition will generally be conducted as a DoD-financed effort by two or more contractors working in close collaboration with the DoD Component having development responsibility. A fully competitive environment shall be established, with the competition in terms of concept, design approach, trade-off solutions, management plans, schedule and similar factors as well as overall cost. Competition shall be maintained until negotiations for a satisfactory contract for Engineering Development have progressed, in the judgment of the system/project manager, to the point at which competition is no longer required. It should be recognized that negotiation with one contractor is permitted and sometimes desirable. Competitive negotiations (and the resultant contract) should in no case be based exclusively on cost.

b. Contract Definition by Sole-Source Contractor. In the case of major modifications to (1) an existing Engineering Development project or (2) an item already in the inventory, Contract Definition may be conducted on a sole-source basis by the contractor responsible for the predecessor item, provided that competition is not feasible or desirable.

c. Contract Definition by In-House Laboratories.
Contract Definition may be conducted by In-House Laboratories when they will perform all or most of the Engineering Development effort. Contract Definition in this case will include all provisions of this Directive except those relating to a competitive environment and a fully structured incentive contract.

2. Request for Proposal for Contractor-Conducted Contract Definition.
A Request for Proposal (RFP) shall solicit a planning purpose proposal for Engineering Development and a firm proposal covering the contractor's effort during Contract Definition. The RFP must communicate fully the DoD's intent and, based upon DoD definition prior to release of the RFP, delineate system parameters fully, identifying those that are mandatory and those which are subject to deviation. It is essential that the RFP encourage alternatives and stimulate initiative and creativity by the contractors. The RFP shall include the information outlined in Enclosure (1).

3. Contracting for Contract Definition.
It is the intention of the DoD that each contractor will be fully compensated under the terms of his contract for his proposed work during Contract Definition. Any action that suggests cost sharing, such as prior announcement of funds available for Contract Definition, shall be avoided. Contract Definition shall be conducted using fixed price contracts. It is the intent of the DoD to reimburse one or more of the Contract Definition contractors for key personnel during the period from submission of the proposal package until award of a definitive Engineering Development contract in order to maintain the cadre of competent, knowledgeable personnel. These personnel may be engaged in assigned tasks, such as refinement of specifications.

4. Total System Trade-offs.
Trade-offs should be used to obtain, within the mission and performance envelopes, an optimum balance between total cost, schedule, and operational effectiveness for the system. In this context, total cost means the total cost of acquisition and ownership (development, production, deployment, operation, and maintenance); operational effectiveness includes all factors influencing effectiveness in operational use (such as "pure" performance, reliability and maintainability); and system includes the hardware itself and all other required items, such as facilities, personnel, data, training equipment, etc.

5. Specifications.
The specifications which are developed during Contract Definition should be performance specifications rather than detailed design specifications. In general, performance specifications are preferred for Engineering Development because detailed design specifications severely limit the latitude of design, engender contract changes, and require excessive precontract negotiation. The policy of requiring performance specifications as an output of Contract Definition is not intended to prevent contractors from studying proposed designs and including detailed design information in the Contract Definition report.

6. Proposal Package.

a. As a product of the Contract Definition effort, each participant shall submit, in accordance with Enclosure (2), a complete technical, management, and cost proposal package for the Engineering Development.

b. In the case of contractor conducted Contract Definition, the type of Engineering Development proposal preferred (for firm fixed price, fixed-price-incentive or cost-plus-incentive-fee contract) will have been specified by the Government.

c. Proposals for incentive contracts will include specific incentive features based upon guidance furnished by the DoD in the RFP and subsequently. Incentive guidance typically will include the relative importance of cost, schedule, and performance; important milestones; and performance parameters upon which incentives will be based.

7. Contract Definition Schedule.
It is intended that the contract period of Contract Definition will require no longer than six months with three to four months the norm. Further, it is intended that decision action required after Contract Definition report and proposal submission, including full action on any required PCP, be expedited, with the objective of a signed definitive contract within 18 weeks after submittal of reports and proposals.

8. Contracting for Engineering Development.

a. Source selection processes will be governed by the provisions of reference (f). The authority for the source selection, both in choice of Contract Definition contractors and choice of the Engineering Development contractor, will be designated in the Format B which gives conditional approval of the Engineering Development. Source selection for Engineering Development shall be based upon proposals as initially submitted in order to stimulate the best possible proposals. Technical data ordered under DoD-financed contracts which specify experimental, developmental or research work and which are obtained with unlimited rights may be used by the Government after the Contract Definition proposal packages are submitted. Therefore, the negotiations referred to in this paragraph may include negotiations to improve the final product by incorporation of desirable features from other Contract Definition studies to the extent that the Government has unlimited rights in the technical data describing such features.

b. The contract for Engineering Development (or the contractor portions when Engineering Development is an in-house effort with some contractor portions) shall be executed in definitive form prior to initiation of the contractor Engineering Development effort. The contract shall be fixed price or incentive in the order of preference as indicated in the ASPR.

G. Actions Resulting from Contract Definition.

1. Whether the conditional decision is to be ratified after Contract Definition depends upon confirmation during Contract Definition of the technical, financial and schedule factors. Therefore, as a result of Contract Definition, the DoD Component will make one of the following alternative recommendations:

a. To contract for the Engineering Development based upon the proposals received.
b. To contract for the Engineering Development by an alternative source, provided that source has met the objectives of paragraph V. B. and, further, provided that selection of the alternative source is in the best interests of the Government.
c. To continue further Contract Definition effort.
d. To defer or abandon the Engineering Development effort.
e. To undertake further Exploratory or Advanced Development of key components and/or system studies.

2. The Program recommendation of Subsection VI. G. 1. above shall be by memorandum to DDR&E, unless the provisions of reference (e) require a specific PCP document. Related financing requirements will be processed in accordance with reference (g) and other applicable established procedures. The recommendation shall be accompanied or followed within 60 days by an up-to-date TDP. OSD will act on the recommendation by memorandum or Format B, as appropriate, to the DoD Component.

VII. WAIVERS TO THIS DIRECTIVE.

If a DoD Component considers it in the best interests of the Government to waive application of any portion of this Directive to a specific project, the reasons for the waiver shall be submitted to DDR&E. DDR&E shall have authority to grant waivers for all provisions of this Directive that are not specifically reserved to the Secretary of Defense.

VIII. DETAILED GUIDANCE.

The Director of Defense Research and Engineering will provide more detailed guidance in the form of a DoD Guide for Contract Definition.

IX. IMPLEMENTATION.

Each Military Department and Defense Agency will implement this Directive within 60 days and forward three copies of each implementing document to the Director of Defense Research and Engineering.

X. EFFECTIVE DATE.

This Directive is effective immediately.

Robert S. McNamara

Secretary of Defense

Enclosures - 2
1. Information in RFP
2. Information in Proposal Package

# INFORMATION IN THE REQUEST FOR PROPOSAL FOR CONTRACTOR-CONDUCTED CONTRACT DEFINITION

It is essential that information be included in the Request for Proposal (RFP) on which potential contractors may base high quality proposals. Both technical and managerial aspects of the proposed Engineering Development must be considered thoroughly in the RFP and the resultant proposals. The RFP shall include, but shall not be limited to, the following items (except as specifically exempted by the DDR&E):

1. Mandatory requirements based upon approved program guidance.

2. Results of prior studies (including feasibility, cost effectiveness, major trade-offs, operational analysis, logistics analysis, etc.) deemed necessary for adequate background information for the contractors.

3. Criteria against which proposals will be evaluated, and their relative importance in general terms.

4. Outline of the Government's plan for system/project management, including identification of pertinent Government organizations and communications channels within the Government and between Government and contractors.

5. A network showing planned activities, information submissions, reviews, approvals and decisions for Contract Definition and Engineering Development, indicating their interdependence and approximate time phasing.

6. A work statement for the Contract Definition.

7. A specimen work statement for Engineering Development.

8. Documentation that will be required during Contract Definition.

9. Details of the format and content of the proposal package for Engineering Development.

10. Incentive features desired in the Engineering Development proposal, including relative importance of incentives and specific schedule and performance items that will be subject to incentives.

11. Statement of the Government's requirements for system/ project management.

12. Quantitative reliability and maintainability goals and demonstration concepts.

13. Concurrency considerations, production quantities and similar information provided as a basis for schedule and cost estimating purposes.

14. Identification of specifications, with any waivers or deviations, planned to be written into the resulting Engineering Development contract.

15. Required documentation during the Engineering Development.

16. Mandatory subsystem breakdown (if any).

17. Government furnished equipment.

18. A request for other information that the DoD Component requires.

## INFORMATION IN THE PROPOSAL PACKAGE

The proposal package for Engineering Development shall contain but shall not be limited to, the following items (except as specifically exempted by the DDR&E):

1. A list of each of the end items required for operation and maintenance.

2. Performance specifications for each of the end items.

3. The work breakdown structure for Engineering Development as a whole (primarily oriented to hardware or product rather than to function); the statement of work in the proposal and the resulting authorizing document will be itemized in accordance with the work breakdown structure.

4. A PERT[1] network plan for the Engineering Development of all items contained in the system or subsystem on which the participant proposed indicating events that interface with the work of other participants. In addition, a planning and decision network for the period beyond Engineering Development, including production, operation, maintenance, training, logistics, and deployment.

5. Principal objectives and features of the overall system design, including recommendations for its operational use based on operational concepts established by the DoD Component.

6. A recommended plan for maintenance of the system based upon maintenance and logistic concepts established by the DoD Component.

7. Detailed cost estimates for the Engineering Development (which include cost estimates for the items of the work breakdown structure) consistent with PERT/Cost; together with planning estimates for the period beyond Engineering Development (investment and operating cost for five years, including production, operation, maintenance, etc.).

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1 Program Evaluation and Review Technique

8. A milestone schedule for the Engineering Development consistent with the PERT network and validated by recycling the PERT planning process, together with planning schedules for the period beyond Engineering Development (investment and operation for five years, including production, training, maintenance, etc.).

9. Quantitative reliability and maintainability specifications for the system and major subsystems and proposed test plans to demonstrate their achievement.

10. Time/cost/performance trade-off decisions that have been made with respect to major alternatives, including subsystems and components, and backup information showing the operational and cost effectiveness of these alternatives.

11. Required new designs and technology, if any, and a proposed test plan to demonstrate feasibility, including justification of the decision that existing designs or techniques are not applicable.

12. Foreseeable technical problems and proposed solutions including backup efforts, if necessary.

13. Other problems that could not be defined or resolved during Contract Definition.

14. Technical specifications and performance requirements for those items of system and subsystem support for which early Engineering Development is required (such as facilities, training equipment, documentation, etc.); and analysis and delineation of the remaining major aspects relating to system and subsystem support (such as logistics planning, spare-parts planning, etc.).

15. Delivery schedules and requirements for data and documentation.

16. Proposed schedule of production engineering and production tooling with relation to the Engineering Development, if appropriate.

17. Participant commitments for managing the project including:

    (a) Planned participant project-management structure and organization.

    (b) Key project management and technical personnel by name and experience, together with statements of responsibility and authority for Engineering Development.

    (c) Management-control and cost-control techniques, including reporting procedures.

    (d) Make-buy subcontracting procurement plan and gold-flow implications, if any.

    (e) Facility requirements, if any.

18. Developing agency-participant coordination networks.

19. Contractor proposals on the specific features of an incentive contract. (This arrangement is considered important because it will permit the negotiation of targets and incentive patterns into the contract while competitive proposals are still available and furnish the basis for incentive provisions in the contract).

20. Specific reference to those Government specifications requiring waiver or deviation, including a statement of such waiver or deviation.